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CENTRAL INTELLIGENCE AGENCY

19 March 1951

INTELLIGENCE MEMORANDUM NO. 353

SUBJECT: The Manganese Industry in India

General.

India has been an important contributor to US supplies of manganese ore for many years. From 1942 to 1945, US imports from India averaged 334,000 long tons per year, larger than those from any other country. India continued to rank first during the next two years, but in 1948 US imports from the USSR and from the Union of South Africa were larger than those from India. In 1950, however, 585,971 long tons were shipped from India to the US, representing a large increase over India's 1949 exports to the US of 383,000 long tons.

Location.

The principal manganese ore-producing areas of India are in Madhya Pradesh (formerly Central Provinces), Bombay, Bihar, Orissa, Sandur, Madras, and Mysore. A small amount of ore is also produced in Goa, Portuguese India. (For location of manganese deposits, see map CIA 11782.)

Madhya Pradesh is the most important of the producing areas, currently supplying 80 percent of the Indian output. The Central Provinces Manganese Ore Company (CPMO), a British-owned concern, operates 22 mines scattered throughout a belt 120 miles long by 10 miles wide, extending through Nagpur, Balaghat, and Bhandara districts. The CPMO produces 80 percent of the manganese ore shipped from Madhya Pradesh. The balance from this area, amounting to 75,000 to 100,000 tons a year, is produced by small Indian

Note: This report has not been coordinated with the intelligence organizations of the Departments of State, the Army, the Navy, and the Air Force. It contains information available to CIA as of 19 March 1951.

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operators. Much of their ore comes from extensions of the beds worked by the CPMO.

#### Mining.

Manganese deposits are generally found in hills and are mined by removing the overburden and cutting directly from the reef of manganese. In some mines the process consists of scaling off the ore, which is very brittle, from the hillside. Some blasting is done, but usually the mining proceeds satisfactorily without it. The ore is loaded by hand into small baskets that are carried on the workers' heads to the nearest tramline, dump, or sorting floor.

The management of CPMO is convinced that the mining operations should be mechanized as soon as possible, since many of the mines have reached or passed the economic limit for mining-by-hand methods. A start has been made toward small-scale mechanization, but no comprehensive program has been planned and very little machinery has been introduced. Two mines in India are reported to have underground operations. They are the Bharweli mine, located at longitude 80°15'E - latitude 21°50'N, in the Balaghat district of Madhya Pradesh, and the Shivrajpur mine, located 17 miles from the Champaner Road railroad station in the State of Bombay. No information is available as to the extent of mechanization in either mine.

#### Transportation.

The lack of adequate transport is the greatest problem of both the large and the small manganese mine owners. Because of scarcity of railroad freight cars, there are delays in moving out ore that has been mined. In such cases, shortage of storage space and of working capital at times precludes additional mining.

The CPMO and one Indian mine owner have independent rail sidings. In other cases, ore is inefficiently transported from mine to railhead by bullock cart or by motor truck. Gasoline is difficult to obtain. For transporting the ore from Ukwa, longitude 80°28'E - latitude 21°58'N, in the Balaghat district, CPMO has a steam-powered

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steel ropeway over which buckets are drawn from the mine to the siding at Bharweli, a distance of 18 miles.

Many of the mines in Madhya Pradesh, particularly in the Balaghat district, are served only by narrow-gauge railroads. The ore must be unloaded and reloaded by hand for transfer to broad-gauge freight cars at Gondia and at Nagpur on the main line. This transshipment also makes it necessary to coordinate the flow of narrow-gauge and broad-gauge freight cars.

The section of the Bengal Nagpur Railway from Nagpur to Visakhapatnam (formerly Vizagapatam) with its feeder lines is the most important railroad for the movement of manganese ore, since it serves the important Madhya Pradesh area. (The location of a tunnel, the more important bridges, and the transfer points along this line are shown on map CIA 11782.) Another section of the Bengal Nagpur Railway serves as an outlet for the ore from northern Orissa and southern Bihar. The ore is moved over a branch line from Bara Jamda to Raj Kharsawan and thence to Calcutta for export. A small amount of ore moves from Baroda through the port of Bombay and a lesser amount through the port of Mormugão, Portuguese India.

#### Port of Visakhapatnam.

Visakhapatnam, located at longitude 83°18'E - latitude 17°42'N, is the chief port for manganese ore shipment. The artificial land-locked harbor, approached through a dredged channel 300 feet wide, is designed to admit ships drawing up to 28½ feet and having an over-all length of not more than 550 feet. The channel silts up and must occasionally be dredged. In the port are three quay berths, of which Nos. 1 and 2 are equipped for the handling of manganese ore. The quay berths are equipped with six 3-ton level luffing electric cranes. Three 2-foot--6-inch-gauge switching locomotives at the port are used for hauling the manganese ore from the dumps to shipside. Two of these locomotives and four cranes serve No. 1 berth, and one locomotive and two cranes serve No. 2 berth. When all of this equipment is

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in operation, the rate of loading at No. 1 berth approaches 2,500 tons per day, and at No. 2 berth approximately 1,000 tons. (The location of port facilities especially provided for handling manganese ore is shown in the inset of Visakhapatnam on map CIA 11782.)

#### Loading.

Manganese is brought down in trainloads from the mines, and the cars are unloaded by hand into long stocking zones along the ore sidings behind the dock area. Dumping space for approximately 100,000 tons of manganese ore has been provided. Blending of ores from different CPMO mines is accomplished by unloading the ore trains from various mines in layers on the long piles paralleling the sidings. The ore is reclaimed for shipment by taking cross-sectional cuts from these piles, thus blending proportionate parts of ore from the various mines.

The ore is loaded on the ship by means of cars (bogies) carrying round ore buckets, which run on a 2-foot--6-inch track between the stockpiles and the docks. The bogies are spotted along the ore piles and are loaded by hand. The switching locomotives then transport the bogies to shipside, where the buckets are picked up from the bogies by dock cranes or ship tackle and are dumped into the holds.

#### Bombay as Alternative Port.

It would be possible to move manganese ore from Madhya Pradesh westward over the Great Indian Peninsula Railway for shipment from Bombay. (See CIA map 11782 for location of tunnels and bridges along this route.) The CPMO has opposed shipment from Bombay because (1) there is a differential of five rupees per ton in the freight rate, (2) the port charges at Bombay are also higher than at Visakhapatnam, (3) there is a shortage of stocking and mixing space at the port, and (4) the rate of loading vessels is low as compared with that of Visakhapatnam, which has been developed as an ore port.

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**Manganese deposits**

**Bridges:**

- Nagavali River at 19°19'N-83°24'E

- 2 - Tel River at 20°13'N-83°14'E
- 3 - Long River at 20°50'N-82°30'E
- 4 - Mahanadi River at 21°10'N-82°03'E
- 5 - Seonakh River at 21°13'N-81°15'E
- 6 - Wainganga River at 21°13'N-79°48'E
- 7 - Kannah River at 21°13'N-79°12'E
- 8 - Mahadi River at 22°43'N-78°19'E
- 9 - Mun River at 20°45'N-76°45'E
- 10 - Thana Creek at 19°11'N-72°57'E

## Railroads

— Broad gauge 5' 6"

—+— Meter gauge 3.3%

**Narrow gauge 2' 6" and 2'**

Approximately 80% of total Indian manganese ore output is derived from deposits in Madhya Pradesh (formerly Central Provinces)

Ore transfer points  
(change of rail/road gauge)

Balaghat

Tunnel (20°17'N; 80°34'E)

9

8

6

Gondia

Dorekasa

5

Raipur

Mahesamund

4

3

Tumkur Road

The Nāgpur to Visākhāpanam section of the Bengali Nāgpur Railway is the present outlet for manganese ore from Madhya Pradesh.

The Nagpur to Bombay section of the Great Indian Peninsula Railway is an alternate route for transporting ore from Madhya Pradesh.

In the 9.5 miles between Kasdra and Igatpuri, there are 10 tunnels and numerous cuts, fills, and short bridges.

Railroad electrified  
between Bombay  
and Igatpuri.

